

**CLAIM STATUS**

1. (Currently Amended) A method of producing surgical grade calcium sulphate characterised in that the method comprises: forming ~~comprises forming~~ an initial calcium sulphate di-hydrate from synthetic constituents; dehydrating the initial calcium sulphate di-hydrate to form calcium sulphate anhydrite; and subsequently rehydrating the calcium sulphate anhydrite by immersing in any one of water and a salt solution where the concentration of salt in solution is less than 1% ~~an aqueous environment~~ and allowing subsequent calcium sulphate di-hydrate to crystallise out.
2. (Original) A method according to claim 1, characterised in that the subsequent di-hydrate is used as a solid material bone filler.
3. (Previously Presented) A method according to claim 1, characterised in that the subsequent di-hydrate is formed into pellets.
4. (Original) A method according to claim 3, characterised in that the crystallized subsequent calcium sulphate di-hydrate is ground prior to forming into pellets.
5. (Original) A method according to claim 1, characterised in that the subsequent calcium sulphate di-hydrate is calcined to form calcium sulphate hemi-hydrate.
6. (Original) A method according to claim 5, characterised in that the calcium sulphate hemi-hydrate is mixed with water to form a settable paste.
7. (Original) A method according to claim 5, characterised in that the calcium sulphate hemi-hydrate is mixed with a salt solution to form a settable paste.
8. (Previously Presented) A method according to claim 5, characterised in that the calcining is hydrothermal to form  $\alpha$  calcium sulphate hemi-hydrate.
9. (Original) A method according to claim 8, characterised in that the calcining is carried out in an autoclave.

10. (Original) A method according to claim 9, characterised in that the calcining is carried out at a pressure of 1-6 bar.

11. (Original) A method according to claim 10, characterised in that the calcining is carried out at 2-3 bar.

12. (Previously Presented) A method according to claim 5, characterised in that the calcining is carried out in dry heat conditions.

13. (Original) A method according to claim 12, characterised in that the calcining is carried out at a temperature of 70-200° C.

14. (Original) A method according to claim 13, characterised in that the calcining is carried out at 150-175° C.

15. (Previously Presented) A method according to claim 8, characterised in that the calcining is carried out for a period of a half to six hours.

16. (Original) A method according to claim 15, characterised in that the calcining is carried out for one to two hours.

17. (Previously Presented) A method according to claim 5, characterised in that following calcining, the calcium sulphate hemi-hydrate is ground to a powder.

18. (Original) A method according to claim 17, characterised in that the powder has particle size of less than 150 microns.

19. (Previously Presented) A method according to claim 1, characterised in that the initial calcium sulphate di-hydrate is formed by mixing soluble calcium and sulphate salts such that calcium sulphate precipitates out.

20. (Original) A method according to claim 19, characterised in that the initial di-hydrate thus formed is washed, and subsequently filtered, crushed and/or dried.
21. (Previously Presented) A method according to claim 19, characterised in that the calcium salt is a chloride.
22. (Previously Presented) A method according to claim 19, characterised in that the calcium salt is a nitrate.
23. (Previously Presented) A method according to claim 19, characterised in that the sulphate is a sodium salt.
24. (Previously Presented) A method according to claim 19, characterised in that the sulphate is a potassium salt.
25. (Previously Presented) A method according to claim 19, characterised in that the sulphate is an ammonium salt.
26. (Previously Presented) A method according to claim 19, characterised in that the calcium and sulphate salts are provided in a substantially equal molecular ratio.
27. (Previously Presented) A method according to claim 1, characterised in that the initial calcium sulphate di-hydrate is formed from neutralising lime with sulphuric acid.
28. (Previously Presented) A method according to claim 1, characterised in that the dehydration of the initial calcium sulphate di-hydrate takes place within a temperature range 110-350°C.
29. (Original) A method according to claim 28, characterised in that the dehydration of the initial calcium sulphate di-hydrate takes place at less than 300°C.

30. (Previously Presented) A method according to claim 1, characterised in that the dehydration of the initial calcium sulphate di-hydrate takes place at a temperature above 350°C to form insoluble anhydrite.

31. (Original) A method according to claim 30, characterised in that the rehydration takes more than five days.

32. (Previously Presented) A method according to claim 1, characterised in that the dehydration of the initial calcium sulphate di-hydrate by the application of heat takes place in an open container.

33. (Previously Presented) A method according to claim 1, characterised in that the dehydration of the initial calcium sulphate di-hydrate by the application of heat takes place in a closed container.

34. (Previously Presented) A method according to claim 1, characterised in that the dehydration of the initial calcium sulphate di-hydrate by the application of heat takes place hydrothermally in the presence of steam.

35. (Previously Presented) A method according to claim 1, characterised in that the rehydration of the calcium sulphate anhydrite takes place immediately following dehydration.

36. (Previously Presented) A method according to claim 1, characterised in that the calcium sulphate anhydrite is fully immersed in water for rehydration.

37. (Previously Presented) A method according to claim 1, characterised in that the calcium sulphate anhydrite is fully immersed in a dilute salt solution for rehydration.

38. (Original) A method according to claim 37, characterised in that the salt solution comprises succinic acid.

39. (Original) A method according to claim 37, characterised in that the salt solution comprises potassium sulphate solution.
40. (Cancelled)
41. (Currently Amended) A method according to claim 1 ~~claim 40~~, characterised in that the concentration of the salt solution is substantially 0.1%.
42. (Previously Presented) A method according to claim 1, characterised in that finely powdered calcium sulphate di-hydrate is added to be present during rehydration such that the powdered calcium sulphate acts as crystal seeds.
43. (Original) A method according to claim 42, characterised in that addition is in the order of 5g per litre of water.
44. (Previously Presented) A method according to claim 28, characterised in that the rehydration takes less than five days.
45. (Previously Presented) A method according to claim 1, characterised in that the subsequent calcium sulphate di-hydrate is dried following crystallisation.
46. (Previously Presented) A method according to claim 8, characterised in that the subsequent calcium sulphate di-hydrate is held in a damp condition prior to calcining.
47. (Previously Cancelled)
48. (Cancelled)
49. (New) A method of producing surgical grade calcium sulphate characterised in that the method comprises: forming an initial calcium sulphate di-hydrate from synthetic constituents; dehydrating the initial calcium sulphate di-hydrate to form calcium sulphate

anhydrite; and subsequently rehydrating the calcium sulphate anhydrite by immersing in an aqueous solution and allowing subsequent calcium sulphate di-hydrate to crystallise out, wherein said aqueous solution is a dilute salt solution where the concentration of the salt in the solution is less than 1%.

50. (New) A method of producing surgical grade calcium sulphate characterised in that the method comprises: forming an initial calcium sulphate di-hydrate from synthetic constituents; dehydrating the initial calcium sulphate di-hydrate to form calcium sulphate anhydrite; and subsequently rehydrating the calcium sulphate anhydrite by immersing in water and allowing subsequent calcium sulphate di-hydrate to crystallise out.